Spencer Hamblen
Curriculum Vitae

Dept. of Mathematics & Computer Science

McDaniel College

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Employment

- Associate Professor, McDaniel College: 2013–present
  Chair, Dept. of Mathematics & Computer Science, 2014–present
- Assistant Professor, McDaniel College: 2007–2013
- Postdoctoral Fellow, Queen's University: 2005–2007

Education

- Ph.D., Mathematics, Cornell University, August 2005
  Ph.D. thesis: *Lifting n-dimensional Galois Representations*
- B.A., Amherst College, May 1998

Publications

- "Local arboreal representations", with J. Anderson, B. Poonen and L. Walton; *International Mathematics Research Notices*, **19** (2018), 5974-5994.
- "Sums of squares in Quaternion Rings", with A. Cooke (McDaniel '16) and S. Whitfield (McDaniel '15); *Involve*, **10** (2017), no. 4, 651-664.
- "The density of primes in orbits of $z^d + c$", with R. Jones and K. Madhu; *International Mathematics Research Notices*, **7** (2015), 1924-1958.
- "Deformations of certain reducible Galois representations II", with R. Ramakrishna; *American Journal of Mathematics*, **130**, no. 4, (2008), 913-944.
- "Lifting n-dimensional Galois representations"; *Canadian Journal of Mathematics*, **60**, no. 5, (2008), 1028-1049.

- "Sums of cubes in Quaternion Rings", with M. Gamble (McDaniel '18), B. Schildhauer (McDaniel '17), C. Truong (McDaniel '18); in preparation.

- "Sums of squares in Quaternion Rings and a Theorem of Watson", with T. Banks (McDaniel '19), T. Sherwin (McDaniel '20), S. Wright (McDaniel '19); in preparation.

Teaching Experience

- Courses taught at McDaniel: College Algebra & Trigonometry, Finite Math, Calculus I and II, Linear Algebra, Fundamentals of Mathematics, Abstract Algebra, Mathematics Problems Seminar, Capstone Experience in Mathematics, Number Theory (two versions: for majors, and for non-majors in the Honors program), Galois Theory, Differential Equations, Conference Experience in Mathematics, Scientific Revolutions (First Year Seminar)

Summer Student-Faculty Research

- Generalizations of Waring's Problem, 2017-2019

- Waring's Problem over Quaternion Rings, 2013-2016

- The Circle Pairing on Elliptic Curves, 2012

- Finding Abundancy Bounds, 2010

Recent Student Conference Attendance

- Spring 2019 MD-DC-VA MAA Regional Conference at Hood College/Frederick Community College
  8 students

- 2019 Joint Mathematics Meetings in Baltimore
  8 students

- MathFest 2018 in Denver
  3 students, 2 presentations

- Spring 2018 MD-DC-VA MAA Regional Conference in Lexington, VA
  1 student

- MathFest 2017 in Chicago (with Ben Steinhurst)
  7 students, 4 presentations

- Spring 2017 MD-DC-VA MAA Regional Conference at Frostburg State
  5 students

- 2017 Joint Mathematics Meetings in Atlanta
  4 students

- MathFest 2016 in Columbus
  4 students, 3 presentations

- Spring 2016 MD-DC-VA MAA Regional Conference at Montgomery College
  3 students, 2 posters

- 2016 Joint Mathematics Meetings in Seattle
  6 students, 1 poster

- MathFest 2015 in Washington, DC
  3 students, 2 presentations

- Spring 2015 MD-DC-VA MAA Regional Conference at Roanoke College
  4 students, 1 presentation

- 2015 Joint Mathematics Meetings in San Antonio
  1 student, 1 presentation, 1 poster

- MathFest 2014 in Portland, OR
  2 students, 1 presentation

- Spring 2014 MD-DC-VA MAA Regional Conference at James Madison
  5 students, 1 presentation

- 2014 Joint Mathematics Meetings in Baltimore
  8 students

- MathFest 2013 in Hartford, CT
  1 student, 1 presentation

Research Interests

- Arithmetic Dynamics – number theoretic properties of iterates of polynomials

- Generalizations of Waring's Problem – Sums of kth powers in p-adic and Quaternion rings (Student-Faculty collaboration)

- Galois Deformation theory

Presentations

- *"Student Research on Generalizations of Waring's Problem"*, Mid-Atlantic Seminar on Numbers III - James Madison, Washington & Lee, 2019

- *"Goodstein sequences"*, McDaniel College, 2019

- *"Waring's Problem and Quaternions"*, Mt. St. Mary's University (Pi Mu Epsilon and Upsilon Pi Epsilon inductions), Shippensburg University, Muhlenberg College, McDaniel College, 2015, 2017, 2019

- *"IBL in Developmental Math Classes"*, MD-DC-VA MAA Regional Conference, University of Mary Washington, 2018

- *"Mastery-Based Grading in Intro to Proofs"*, MD-DC-VA MAA Regional Conference, Christopher Newport University, 2017

- *"Students Writing for Students"*, MD-DC-VA MAA Regional Conference, Johns Hopkins University, 2016

- "*Local Arboreal Representations*", Mid-Atlantic Seminar on Numbers - Towson University, 2016

- "*Deeply Ramified Iterated Extensions*", Joint Mathematics Meetings - Seattle, 2016

- "*Primes, Primes, and No-Longer-Primes*", McDaniel College, 2015

- "*Jan Term at the Joint Meetings*": MD-DC-VA MAA Regional Conference, Bowie State University, 2014

- "*Primes in iterations of $z^d + c$*": MD-DC-VA MAA Regional Conference, Salisbury University; McDaniel College; Joint Mathematics Meetings - Baltimore, 2013, 2014

- "*Congruent numbers*": Hood College; Shippensburg Unniversity; St. Mary's College of Maryland; James Madison University; McDaniel College; Hobart & William Smith Colleges. 2004, 2008, 2009, 2011, 2012

- "*A deformation-theoretic approach to the Inverse Galois Problem*": St. Mary's College of Maryland. 2009

- "*Perfect numbers*": McDaniel College; Ripon College; Muhlenberg College; Morningside College; Queen's University; Siena College; Wells College; Hamilton College; Hobart & William Smith Colleges. 2003-2007

- "*Magic squares*": McDaniel College; Queen's University; Hobart & William Smith Colleges. 2004, 2007, 2012

- "*Incorporating 'clicker' technology into undergraduate math courses*": Queen's University (Teaching and Learning Seminar). 2007

- "*The reducible case of Serre's Conjecture*": Joint Mathematics Meetings - New Orleans. 2007

- "*Deformations of certain reducible Galois representations II*": Canadian Number Theory Association 9, Vancouver. 2006

- "*Lifting n-dimensional Galois representations*": Queen's University; Boston University; University of Rochester; Cornell University. 2005

Service - National

- Founding member, MD-DC-VA IBL (Inquiry Based Learning) Consortium, 2016–present
- Moderator and Judge, MAA Student session at MathFest, 2009-2010, 2013–2015, 2018
- Co-coordinated student activities at Spring MAA MD-DC-VA Section meeting, 2012–2015
- Judge, MAA Undergraduate Poster session at the Joint Mathematics Meetings, 2009, 2011, 2013–2017, 2019
- Referee, *Journal of Integer Sequences*, *Journal of Number Theory*, *Glasgow Journal of Mathematics*, *PRIMUS*, *American Mathematical Monthly* – Notes section
- Reviewer, *Mathematical Reviews*, 2009–present

Service - McDaniel College

- Mathematics and Computer Science department Chair, 2014-present
- Advisor for the McDaniel chapter of Kappa Mu Epsilon, a national mathematics honor society, and the McDaniel College Math Club, 2008-present
- Faculty Affairs Committee, 2015-present
    Chair, 2019-2020
- Acting Director of Affirmative Action for Faculty Searches, 2014-2017
- Curriculum Commitee, 2012-2014
    Chair, 2013-2014
- Faculty Council, 2008-2009, 2009-2012
    Corresponding Secretary, 2011-2012

Selected Awards, Conferences, and Workshops

- Charles A. Boehlke, Jr., Engaged Faculty Fellow Award, 2018
- Inquiry-Based Learning Workshop at Nazareth College, Rochester, NY, 2017
- American Institute of Mathematics workshop on "*The Galois theory of orbits in arithmetic dynamics*", 2015
- Section NExT Fellow 2011-2013
- Project NExT Fellow (Red08 dot)